IES
Integrated Energy Systems

INL Idaho National Laboratory

Integrated Energy Systems Tools: Capability overview and training

What

The DOE Office of Nuclear Energy Integrated Energy Systems (IES) program, led by Idaho National Laboratory (INL), is hosting a **capability overview and training session for its modeling and simulation (M&S) tool suite "Framework for Optimization of ResourCes and Economics" (FORCE).** For more background on FORCE, please visit the IES website: https://ies.inl.gov/SitePages/System_Simulation.aspx.

When

The event will be split in **four 3-hour modules** over four days. A final agenda with specific session times indicated will be distributed at a later date.

March 17, 18, 23 and 24, 2022
(one 3-hour module each day)

Who

The overview and training are primarily **targeted at people new to energy systems modeling** that plan to use the FORCE tool suite. However, anyone interested in knowing more about the M&S capabilities and efforts within IES is welcome to participate.

Registration

The event will be entirely **virtual**, hosted on the Microsoft Teams platform. Registration is **free**. However, **registration is required** by email to Brenda.monson2@inl.gov.

Contact

Registration: Brenda Monson
brenda.monson2@inl.gov

General inquiries: Aaron Epiney
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Module 1 (~ 3h, March 17): INTRODUCTION

Introduction to the IES program and overview of FORCE, as well as an introduction to energy markets. Participants interested only in an IES program overview can opt to attend only this module. Participants interested in more detailed trainings on the different tools within FORCE should plan to join the subsequent modules.

Module 2 (~3h, March 18): ECONOMICS, DYNAMIC CONTROL, ADVANCED VISUALISATION, USE CASES, AND EXPERIMENTS

Overview of the Tool for Economic AnaLysis (TEAL), Feasible Actuator Range Modifier (FARM) for system control, advanced visualization for FORCE, and IES use cases. An overview of the IES experimental program will also be provided.

Module 3 (~3h, March 23): HERON

Holistic Energy Resource Optimization Network (HERON) is a primary part of FORCE that allows the user to construct workflows to solve complex resource allocation problems to meet target economic goals.

Module 4 (~3h, March 24): HYBRID

HYBRID is a collection of transient process models used by FORCE to evaluate use cases. Developed in the Modelica language, these models are capable of representing the physical dynamics of various integrated energy systems and processes.

For modules 2-4: The virtual setting does not allow for "hands-on" training. However, step-by-step demonstrations of how to get started with the different M&S tools will be presented, covering capability overview, installation, input creation, running the code, and output analysis.